Polor Bears in Phoenix?

Post Lesson Plan 1

Grades: 3-5

Setting: Classroom

Standards: Environment and Ecology: 4.6.4A, 4.6.4C, 4.7.4C

Objectives: Students will be able to:
- Identify problems for an animal moved from its natural environment to captivity

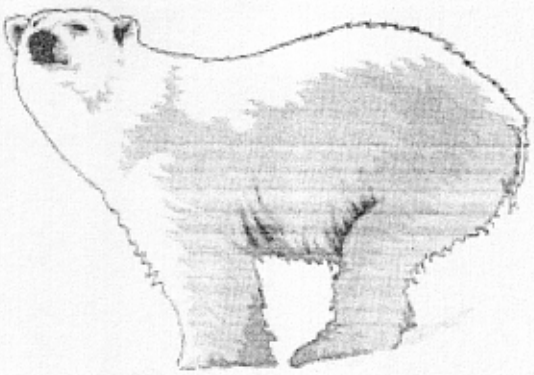
Overview: (Activity taken from Project WILD!)
Polar bears are Arctic animals. This lesson helps students to consider what happens when a polar bear is moved from an Arctic habitat to a habitat such as a desert.

Materials: Paper and drawing supplies
Optional: clay or other material

Procedure: Follow procedure for activity on pages 14-16.

Assessment: Students discuss merits and drawbacks of the various enclosures.

Polar Bears in Phoenix?



Objective

Students will identify problems for an animal moved from its natural environment to captivity.

Method

Students design and draw a zoo enclosure appropriate for the survival of a polar bear in a hot, arid climate.

Materials

Paper and drawing supplies (pens, markers, crayons); OPTIONAL: Students could construct a model using balsa wood or other material

Background

NOTE: See the Project WILD activity "What Bear Goes Where?".

Polar bears are arctic animals. They spend 90 percent of their time on floating ice, hunting seals for food. The remaining 10 percent of their time is spent on land. When awake, polar bears are active. They spend considerable amounts of time foraging and hunting for food. They are able to obtain their food from the sea during both of the arctic seasons: the three-month summer of continuous daylight and the nine-month long, darker winter. They do, however, range on the tundra in summer, feeding on leaves and fruits of tundra plants and an occasional muskox or caribou, which a polar bear can outrun over short distances. These bears range over broad distances on the ice, traveling southward in winter to stay near open water and shifting ice flows, catching birds and seals as they come up for air and occasionally diving for fish. They eat seaweed in difficult times.

An increasing number of zoos are making an effort to display animals in a simulated version of their natural habitat. The local environment must be adapted to suit the animal's wants and needs in order for the animal to survive and thrive. In the case of polar bears, that represents quite a challenge.

In captivity, polar bears do not like being enclosed, making it very difficult to gain access for maintenance of their enclosure. On smooth surfaces, they have a habit of twisting around on their hindquarters in such a way that the hind claws get very little use, can grow too long, and—due to their curvature—can become imbedded in the bear's skin. Infant bears require warmth and the solitude of a den during their first several months of life. Male bears, if not kept separately, have been known to kill older cubs.

In the heat of summer, the bears spend most

Grade Level: 5-8

Subject Areas: Science, Environmental Education, Expressive Arts

Duration: one 45-minute session

Group Size: any

Setting: indoors

Conceptual Framework Topic Reference: CAIIA1a, CAIIA1b

Key Terms: zoo, adaptation, survival

Appendices: Local Resources

of their time in the cool recesses of their dens or in the cool, deep water in their pool. The National Zoo in Washington, D.C., has air-conditioned its polar bear dens and installed windows in the side walls of their pool for subsurface viewing of the animals. The zoo also has changed the bear's diet in summer to reduce the thickness of the bear's fat layer, thus keeping the bears cooler.

In designing a zoo enclosure for a polar bear, students should take this information into consideration:

Polar bears weigh 700 to 900 pounds at maturity, with a length of up to ten feet. They can jump 10 to 12 feet into the air from a standing position.

The enclosure should contain everything the animal needs to survive: a sleeping place, hiding place or den for solitude, pool, source of drinking water, food and space for exercise. The enclosure should look as unlike a cage as possible. The bear's enclosure does not need to be entirely refrigerated. Polar bears only need a cool place in which to retreat. Also consider:

- temperature (day, night)
- humidity
- floor covering
- slope of floor (for cleaning)
- color
- light intensity (day, night)
- length of day
- water
- food, diet
- plant life
- air pressure
- wind velocity and direction
- maintenance

The major purpose of this activity is for students to recognize that animals are adapted to the environments in which they have lived for a long time. If people move animals to environments different from those for which the animals are adapted, then special attention must be paid to creating conditions in which the animals can live.

Procedure

1. Introduce polar bears to the students with a brief description of their habitat and habits. Point out physical and behavioral adaptations of the polar bears to their natural environment and climate. Try to show the students pictures of both young and mature animals.
2. Tell the students they will each have the opportunity to design their own zoo enclosure for a polar bear that is being moved from its natural habitat in northern Alaska to the desert environment of Phoenix, Arizona. They are to create an environment that replicates (to the extent possible) the characteristics of the environment for which the bear is adapted. What do they need to consider? Compare and contrast the two environments. Identify and describe the bear's habitat needs. What can be done to meet those needs in Phoenix? Students may want to work individually or in teams.
3. Give each student a large piece of paper and drawing supplies. If possible, have them list some of the major features they would like their enclosure to include on a separate piece of paper before beginning to draw.
4. Display the drawings on a bulletin board. Allow the class time to view the drawings and discuss merits and drawbacks of the various enclosures.
5. As a summary, discuss some of the problems these bears would have in captivity. Talk about the responsibilities people have to meet animals' needs if they are put in captivity.

Extensions

1. If possible, visit a polar bear at a local zoo.
2. Visit several different kinds of animals in captivity. Where do the animals actually come from? How and why are they there? Compare the animals' natural habitats to those provided in the captive conditions. What differences are there between their quality of life in a zoo and in the wild? What was their original habitat range?
3. Discuss the purposes of placing animals in captivity, and discuss arguments for and against such captivity. What is the current status of their natural habitats? What conservation efforts exist to maintain wild places for each species? What conservation efforts are not being done?

Aquatic Extension

See the Project WILD Aquatic activity "Designing a Habitat."

Evaluation

Describe five challenges a polar bear would face if it were placed in captivity. Suggest possible solutions for each of these challenges, explaining your reasoning.